

CLAIM AMENDMENTS

Please cancel claims 1 – 64, 76 and 77 as shown in the complete list of claims below.

1 – 64 Cancelled

65. (Original) A system comprising:

- a traction unit operable to traverse a surface;

- a tether attached to the traction unit and operable to suspend the traction unit should the traction unit fall; and

- a boom attached to the tether and operable to suspend the tether.

66. (Original) The system of claim 65 wherein the traction unit comprises:

- a frame;

- a plurality of drive wheels attached to the frame and operable to propel the frame across a surface;

- a plurality of adherence members attached to and movable relative to the frame and operable to releasably secure the frame to the surface, each adherence member including an adherence foot attached to a body that is operable to extend the adherence foot toward the surface and retract the adherence foot from the surface; and

- a plurality of return mechanisms attached to the frame and each operable to move a respective adherence member to a respective return position when the body retracts the adherence foot from the surface.

67. (Original) A system comprising:

- a first traction unit operable to traverse a surface;

a second traction unit operable to traverse a surface; and

a tether attached to the first and second traction units and operable to suspend the first or second traction unit from the second or first traction unit should the first or second traction unit fall.

68. (Original) The system of claim 67 wherein the tether is rigid.

69. (Original) The system of claim 67 wherein each traction unit comprises:

a frame;

a plurality of drive wheels attached to the frame and operable to propel the frame across a surface;

a plurality of adherence members attached to and movable relative to the frame and operable to releasably secure the frame to the surface, each adherence member including an adherence foot attached to a body that is operable to extend the adherence foot toward the surface and retract the adherence foot from the surface; and

a plurality of return mechanisms attached to the frame and each operable to move a respective adherence member to a respective return position when the body retracts the adherence foot from the surface.

70. (Original) An adherence foot comprising:

a backing plate; and

a first annular lip defining a first inner cavity and operable to form a seal when the lip contacts a surface;

a second annular lip defining a second inner cavity that includes the first annular lip and first inner cavity and operable to form a seal when the second annular lip contacts a surface.

71. (Original) The adherence foot of claim 70 wherein the backing plate includes a vacuum port operable to connect the first inner cavity with a vacuum source.
72. (Original) The adherence foot of claim 70 further comprising a soft viscous material disposed in a lip chamber located between the first annular lip and the second annular lip and operable to protrude from the lip chamber when the first and second lips are forced towards the surface.
73. (Original) The adherence foot of claim 70 further comprising a third annular lip defining a third inner cavity that includes the first and second annular lips and the first and second inner cavities and operable to form a seal when the third annular lip contacts a surface.
74. (Original) The adherence foot of claim 70 further comprising:
- a third annular lip defining a third inner cavity that includes the first and second annular lips and the first and second inner cavities and operable to form a seal when the third annular lip contacts a surface; and
 - a soft viscous material disposed in a lip chamber located between the second annular lip and the third annular lip and operable to protrude from the lip chamber when the second and third lips are forced towards the surface.
75. (Original) A truck comprising:
- a motor;
 - a truck body;
 - a bogie assembly attached to the truck body and including a retractable bogie, a drive wheel and a belt attached to the bogie and drive wheel, wherein the bogie assembly is operable to suspend a portion of the belt away from the surface and is operable to force a portion of the belt against the surface.

a drive shaft disposed within the truck body and attached to the motor and operable to transmit the power generated by the motor to the drive wheel; and

a steering sprocket attached to the truck body and operable to rotate the truck body;

76. – 77. Cancelled

78. (Original) A method of traversing a surface, comprising:

attaching an adherence foot to the surface;

pulling a frame with a drive wheel against the surface by pulling the adherence foot and frame toward one another;

moving the frame relative to the attached adherence foot;

releasing the adherence foot from the surface; and

returning the released adherence foot to a return position.

79. (Original) The method of claim 78 wherein attaching an adherence foot includes generating a vacuum between the adherence foot and the surface.

80. (Original) The method of claim 78 wherein releasing the adherence foot from the surface includes generating air pressure greater than atmospheric pressure between the adherence foot and the surface to blow the adherence foot from the surface.

81. (Original) The method of claim 78 wherein moving the frame relative to the attached adherence foot includes moving the frame relative to a body of a respective adherence member.

82. (Original) The method of claim 78 wherein:

moving the frame relative to the attached adherence foot includes moving the frame relative to a respective body; and

releasing the adherence foot from the surface occurs before the respective body contacts a hard limit that prevents the frame from moving relative to the body.

83. (Original) The method of claim 78:

wherein moving the frame relative to the attached adherence foot includes moving the frame relative to a respective body; and

further comprising stopping the frame from moving relative to the attached adherence foot when a respective body contacts a hard limit and the adherence foot remains attached to the surface.

84. (Original) The method of claim 78 wherein moving the frame relative to the attached adherence foot includes:

moving the frame relative to a respective body; and

crossing with the respective body a soft limit that signals the location of the frame relative to the body before the body contacts a hard limit.

85. (Original) The method of claim 78 wherein:

moving the frame relative to the attached adherence foot includes moving the frame relative to a respective body; and

releasing the adherence foot from the surface includes releasing the adherence foot after the respective body crosses a soft limit but before the adherence member contacts a hard limit.

86. (Original) A method of attaching an adherence foot to the surface comprising:

contacting the surface with two or more annular lips of an adherence foot; and

generating an attachment force in the adherence foot.

87. (Original) The method of claim 86 wherein contacting the surface with the adherence foot includes contacting the surface with three annular lips.
88. (Original) The method of claim 86 wherein generating an attachment force between the adherence foot and the surface includes generating a vacuum between a suction cup and the surface.
89. (Original) The method of claim 86 wherein generating an attachment force in the adherence foot includes:
- pumping air out of an inner cavity in a suction cup with a vacuum source connected to the suction cup; and
 - forming an air-tight or substantially air-tight seal between one or more annular lips and the surface.
90. (Original) The method of claim 86 further comprising maintaining an attachment force in the adherence foot that includes:
- forming an air-tight or substantially air-tight seal between the surface and a first annular lip that defines a first inner cavity; and
 - forming an air-tight or substantially air-tight seal between the surface and a second annular lip that defines a second inner cavity including the first annular lip and first inner cavity, wherein if the second annular lip can not form or loses an air-tight or substantially air-tight seal, a vacuum in the first inner cavity is not destroyed.
91. (Original) The method of claim 86 further comprising releasing the adherence foot from the surface that includes generating air pressure greater than atmospheric pressure between a suction cup and the surface to blow the suction cup away from the surface.
92. (Original) A method of attaching an adherence foot to the surface comprising:

determining the orientation of an adherence member relative to the direction of gravity;

generating an attachment force in the adherence foot; and

adjusting the attachment force in the adherence foot based on the direction of gravity.

93. (Original) The method of claim 92 wherein generating an attachment force includes generating a vacuum between a suction cup and the surface.

94. (Original) The method of claim 92 wherein generating an attachment force includes generating a vacuum between a suction cup and the surface and adjusting the attachment force includes adjusting the vacuum based on the direction of gravity.

95. (Original) A method of pulling the frame toward the surface comprising:

determining the orientation of an adherence member relative to the direction of gravity;

generating a retraction force in the adherence member; and

adjusting the retraction force in the adherence member based on the direction of gravity.

96. (Original) The method of claim 95 wherein generating a retraction force includes generating pressurized air in the adherence member.

97. (Original) The method of claim 95 wherein generating a retraction force includes generating pressurized air in the adherence member and adjusting the retraction force includes adjusting the air pressure generated in the adherence member based on the direction of gravity.

98. (Original) A method of releasing a plurality of adherence feet attached to a surface comprising:

selectively attaching one or more adherence feet to a surface; and

selectively releasing one or more attached adherence feet from the surface while maintaining at least one adherence foot attached to the surface at all times.

99. (Original) The method of claim 98 wherein selectively releasing one or more attached adherence feet from the surface includes releasing the adherence feet attached to respective adherence members that contact respective hard limits established on the frame.

100. (Original) The method of claim 98 wherein selectively releasing one or more attached adherence feet from the surface includes:

releasing the adherence foot attached to a respective adherence member that is the first in time to cross a respective soft limit established on the frame; and

then releasing the adherence foot attached to a respective adherence member that is the second in time to cross a respective soft limit.

101. (Original) The method of claim 98 wherein selectively releasing one or more attached adherence feet from the surface includes:

releasing all adherence feet attached to respective adherence members that contact respective hard limits;

then releasing the adherence foot attached to a respective adherence member that is the first in time to cross a respective soft limit; and

then releasing the adherence foot attached to a respective adherence member that is the second in time to cross a respective soft limit.

102. (Original) The method of claim 98 further comprising determining whether the release times of all the adherence feet are converging to one point in time.

103. (Original) The method of claim 98 further comprising determining whether the release times of all the adherence feet are converging to one point in time and, wherein selectively attaching one or more adherence feet to the surface includes selectively pausing temporarily the attachment to the surface of at least one of the one or more adherence feet.
104. (Original) A method of turning a wheel traversing on a surface comprising:
- moving a wheel out of contact with the surface;
 - turning the wheel while the wheel is out of contact with the surface; and
 - moving the wheel into contact with the surface.
105. (Original) The method of claim 104 wherein moving the wheel away out of contact with the surface includes pushing a frame away from the surface.
106. (Original) A method of traversing an obstruction on a surface comprising:
- sensing the obstruction;
 - lifting a bogie of a bogie assembly higher than the obstruction;
 - contacting the obstruction with a belt of the bogie assembly; and
 - powering a drive wheel along the belt while the belt contacts the obstruction.

SPECIFICATION AMENDMENTS

Please amend paragraph 29 as shown below.

The trucks 50a – 50d propel the traction unit 22 across the surface 23 and include wheels 56a – 56d (56d not shown). The trucks 50a – 50d typically do not attach the traction unit 22 to the surface 23. The trucks 50a – 50d are typically located at the corners of the traction unit 22 while the adherence members 46a – 46d are typically located within the corners for greater stability. Although, the trucks 50a – 50d and adherence members 46a – 46d can be arranged differently.